

# SEQUENCE LISTING

<110> Summers, Anne O.  
Caguiat, Jonathan

<120> Metal Binding Proteins, Recombinant Host Cells and  
Methods

<130> 79-00

<140> unassigned

<141> 2001-10-12

<150> US 60/240,465

<151> 2000-10-12

<160> 18

<170> PatentIn Ver. 2.0

<210> 1

<211> 435

<212> DNA

<213> Shigella flexneri, Tn21 of Plasmid R100

<400> 1

atggaaaata atttggaata cctgaccatt ggcgtttttg ccaaggcggc cgggggtcaac 60  
gtggagacaa tccgcttcta tcagcgcaag ggcctgttgc gggaaccgga caagccttac 120  
ggcagcatcc gccgctatgg ggaggcggac gtgggttcggg tgaaattcgt gaaatcggca 180  
cagcggctgg ggttcagtct ggacgagatt gccgagctgt tgcggctcga cgatggcacc 240  
cactgcgagg aggccagcag cctggccgaa cacaagctca aggacgtgcg cgagaagatg 300  
gccgacttgg cgcgcattgga aaccgtgctg tctgaactcg tgtgcgcctg ccatgcacga 360  
aaggggaatg tttcctgccc gttgatcgcg tcactacagg gcgaagcagg cctggcaagg 420  
tcagctatgc cttag 435

<210> 2

<211> 144

<212> PRT

<213> Shigella flexneri, Tn21 of Plasmid R100

<400> 2

Met Glu Asn Asn Leu Glu Asn Leu Thr Ile Gly Val Phe Ala Lys Ala  
1 5 10 15

Ala Gly Val Asn Val Glu Thr Ile Arg Phe Tyr Gln Arg Lys Gly Leu  
20 25 30

Leu Arg Glu Pro Asp Lys Pro Tyr Gly Ser Ile Arg Arg Tyr Gly Glu  
35 40 45

Ala Asp Val Val Arg Val Lys Phe Val Lys Ser Ala Gln Arg Leu Gly  
50 55 60

Phe Ser Leu Asp Glu Ile Ala Glu Leu Leu Arg Leu Asp Asp Gly Thr  
65 70 75 80

His Cys Glu Glu Ala Ser Ser Leu Ala Glu His Lys Leu Lys Asp Val  
85 90 95

Arg Glu Lys Met Ala Asp Leu Ala Arg Met Glu Thr Val Leu Ser Glu  
100 105 110

Leu Val Cys Ala Cys His Ala Arg Lys Gly Asn Val Ser Cys Pro Leu  
115 120 125

Ile Ala Ser Leu Gln Gly Glu Ala Gly Leu Ala Arg Ser Ala Met Pro  
130 135 140

<210> 3  
<211> 321  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: chelon

<400> 3  
atgacacact gcgaggaggc cagcagcctg gccgaacaca agctcaagga cgtgcgcgag 60  
aagatggccg acttggcgcg catggaaacc gtgctgtctg aactcgtgtg cgctgccat 120  
gcacgaaagg ggaatgtttc ctgcccgttg atcgcgtcac tacagggatc ctcaggcacc 180  
cactgcgagg aggccagcag cctggccgaa cacaagctca aggacgtgcg cgagaagatg 240  
gccgacttgg cgcgcatgga aaccgtgctg tctgaactcg tgtgcgcctg ccatgcacga 300  
aaggggaatg tttcctgccc g 321

<210> 4  
<211> 117  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: chelon

<400> 4  
Met Thr His Cys Glu Glu Ala Ser Ser Leu Ala Glu His Lys Leu Lys  
1 5 10 15

Asp Val Arg Glu Lys Met Ala Asp Leu Ala Arg Met Glu Thr Val Leu  
20 25 30

Ser Glu Leu Val Cys Ala Cys His Ala Arg Lys Gly Asn Val Ser Cys  
35 40 45

Pro Leu Ile Ala Ser Leu Gln Gly Ser Ser Gly Thr His Cys Glu Glu  
50 55 60

Ala Ser Ser Leu Ala Glu His Lys Leu Lys Asp Val Arg Glu Lys Met  
65 70 75 80

Ala Asp Leu Ala Arg Met Glu Thr Val Leu Ser Glu Leu Val Cys Ala  
85 90 95

Cys His Ala Arg Lys Gly Asn Val Ser Cys Pro Ser Ala Trp Ser His  
100 105 110

Pro Gln Phe Glu Lys  
115

<210> 5

<211> 117

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: chelon

<400> 5

Met Thr His Cys Glu Glu Val Ser Ser Leu Ala Glu His Lys Leu Lys  
1 5 10 15

Asp Val Arg Glu Lys Met Ala Asp Leu Ala Arg Met Glu Thr Val Leu  
20 25 30

Ser Glu Leu Val Cys Ala Cys His Ala Arg Lys Gly Asn Val Ser Cys  
35 40 45

Pro Leu Ile Ala Ser Leu Gln Gly Ser Ser Gly Thr His Cys Glu Glu  
50 55 60

Val Ser Ser Leu Ala Glu His Lys Leu Lys Asp Val Arg Glu Lys Met  
65 70 75 80

Ala Asp Leu Ala Arg Met Glu Thr Val Leu Ser Glu Leu Val Cys Ala  
85 90 95

Cys His Ala Arg Lys Gly Asn Val Ser Cys Pro Ser Ala Trp Ser His  
100 105 110

Pro Gln Phe Glu Lys  
115

<210> 6

<211> 118

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: chelon

<400> 6

Met Thr His Cys Glu Glu Ala Ser Ser Leu Val Glu His Lys Leu Lys  
1 5 10 15

Asp Val Arg Glu Lys Thr Met Ala Asp Leu Ala Arg Met Glu Thr Val  
                   20                  25                  30  
 Leu Ser Glu Leu Val Cys Ala Cys His Ala Arg Lys Gly Asn Val Ser  
                   35                  40                  45  
 Cys Pro Leu Ile Ala Ser Leu Gln Gly Ser Ser Gly Thr His Cys Glu  
                   50                  55                  60  
 Glu Ala Ser Ser Leu Val Glu His Lys Leu Lys Asp Val Arg Glu Lys  
                   65                  70                  75                  80  
 Met Ala Asp Leu Ala Arg Met Glu Thr Val Leu Ser Glu Leu Val Cys  
                   85                  90                  95  
 Ala Cys His Ala Arg Lys Gly Asn Val Ser Cys Pro Ser Ala Trp Ser  
                   100                  105                  110  
 His Pro Gln Phe Glu Lys  
                   115

<210> 7  
 <211> 117  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: chelon

<400> 7  
 Met Thr His Cys Glu Glu Ala Ser Ser Leu Ala Glu His Lys Leu Lys  
           1                  5                  10                  15  
 Asp Val Arg Glu Thr Met Ala Asp Leu Ala Arg Met Glu Thr Val Leu  
                   20                  25                  30  
 Ser Glu Leu Val Cys Ala Cys His Ala Arg Lys Gly Asn Val Ser Cys  
                   35                  40                  45  
 Pro Leu Ile Ala Ser Leu Gln Gly Ser Ser Gly Thr His Cys Glu Glu  
                   50                  55                  60  
 Ala Ser Ser Leu Ala Glu His Lys Leu Lys Asp Val Arg Glu Thr Met  
                   65                  70                  75                  80  
 Ala Asp Leu Ala Arg Met Glu Thr Val Leu Ser Glu Leu Val Cys Ala  
                   85                  90                  95  
 Cys His Ala Arg Lys Gly Asn Val Ser Cys Pro Ser Ala Trp Ser His  
                   100                  105                  110  
 Pro Gln Phe Glu Lys  
                   115

<210> 8  
 <211> 117  
 <212> PRT  
 <213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: chelon

<400> 8

Met Thr His Cys Glu Glu Ala Ser Ser Leu Ala Glu His Lys Leu Lys  
 1 5 10 15

Asp Val Arg Glu Gln Met Ala Asp Leu Ala Arg Met Glu Thr Val Leu  
 20 25 30

Ser Glu Leu Val Cys Ala Cys His Ala Arg Lys Gly Asn Val Ser Cys  
 35 40 45

Pro Leu Ile Ala Ser Leu Gln Gly Ser Ser Gly Thr His Cys Glu Glu  
 50 55 60

Ala Ser Ser Leu Ala Glu His Lys Leu Lys Asp Val Arg Glu Gln Met  
 65 70 75 80

Ala Asp Leu Ala Arg Met Glu Thr Val Leu Ser Glu Leu Val Cys Ala  
 85 90 95

Cys His Ala Arg Lys Gly Asn Val Ser Cys Pro Ser Ala Trp Ser His  
 100 105 110

Pro Gln Phe Glu Lys  
 115

<210> 9  
 <211> 117  
 <212> PRT  
 <213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: chelon

<400> 9

Met Thr His Cys Glu Glu Ala Ser Ser Leu Ala Glu His Lys Leu Lys  
 1 5 10 15

Asp Val Arg Glu Lys Met Ala Asp Leu Ala Arg Val Glu Thr Val Leu  
 20 25 30

Ser Glu Leu Val Cys Ala Cys His Ala Arg Lys Gly Asn Val Ser Cys  
 35 40 45

Pro Leu Ile Ala Ser Leu Gln Gly Ser Ser Gly Thr His Cys Glu Glu  
 50 55 60

Ala Ser Ser Leu Ala Glu His Lys Leu Lys Asp Val Arg Glu Lys Met  
65 70 75 80

Ala Asp Leu Ala Arg Val Glu Thr Val Leu Ser Glu Leu Val Cys Ala  
85 90 95

Cys His Ala Arg Lys Gly Asn Val Ser Cys Pro Ser Ala Trp Ser His  
100 105 110

Pro Gln Phe Glu Lys  
115

<210> 10

<211> 117

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: chelon

<400> 10

Met Thr His Cys Glu Glu Ala Ser Ser Leu Ala Glu His Lys Leu Lys  
1 5 10 15

Asp Val Arg Glu Lys Met Ala Asp Leu Ala Arg Ile Glu Thr Val Leu  
20 25 30

Ser Glu Leu Val Cys Ala Cys His Ala Arg Lys Gly Asn Val Ser Cys  
35 40 45

Pro Leu Ile Ala Ser Leu Gln Gly Ser Ser Gly Thr His Cys Glu Glu  
50 55 60

Ala Ser Ser Leu Ala Glu His Lys Leu Lys Asp Val Arg Glu Lys Met  
65 70 75 80

Ala Asp Leu Ala Arg Ile Glu Thr Val Leu Ser Glu Leu Val Cys Ala  
85 90 95

Cys His Ala Arg Lys Gly Asn Val Ser Cys Pro Ser Ala Trp Ser His  
100 105 110

Pro Gln Phe Glu Lys  
115

<210> 11

<211> 117

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: chelon

<400> 11

Met Thr His Cys Glu Glu Ala Ser Ser Leu Ala Glu His Lys Leu Lys  
1 5 10 15

Asp Val Arg Glu Lys Met Ala Asp Leu Ala Arg Met Glu Thr Val Leu  
20 25 30

Ser Glu Leu Val Cys Ala Cys His Ala Arg Lys Gly Asn Val Pro Cys  
35 40 45

Pro Leu Ile Ala Ser Leu Gln Gly Ser Ser Gly Thr His Cys Glu Glu  
50 55 60

Ala Ser Ser Leu Ala Glu His Lys Leu Lys Asp Val Arg Glu Lys Met  
65 70 75 80

Ala Asp Leu Ala Arg Met Glu Thr Val Leu Ser Glu Leu Val Cys Ala  
85 90 95

Cys His Ala Arg Lys Gly Asn Val Pro Cys Pro Ser Ala Trp Ser His  
100 105 110

Pro Gln Phe Glu Lys  
115

<210> 12

<211> 117

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: chelon

<400> 12

Met Thr His Cys Glu Glu Ala Ser Ser Leu Ala Glu His Lys Leu Lys  
1 5 10 15

Asp Val Arg Glu Lys Met Ala Asp Leu Ala Arg Met Glu Thr Val Leu  
20 25 30

Ser Glu Leu Val Cys Ala Cys His Ala Arg Lys Gly Asn Val Ser Cys  
35 40 45

Pro Leu Ile Ala Leu Leu Gln Gly Ser Ser Gly Thr His Cys Glu Glu  
50 55 60

Ala Ser Ser Leu Ala Glu His Lys Leu Lys Asp Val Arg Glu Lys Met  
65 70 75 80

Ala Asp Leu Ala Arg Met Glu Thr Val Leu Ser Glu Leu Val Cys Ala  
85 90 95

Cys His Ala Arg Lys Gly Asn Val Ser Cys Pro Ser Ala Trp Ser His  
100 105 110

Pro Gln Phe Glu Lys  
115

<210> 13  
<211> 33  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: primer

<400> 13  
tgcggcggctc tcaaattgaca cactgagagg agg 33

<210> 14  
<211> 33  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: primer

<400> 14  
gcctgaggat ccctgtagt acgcgatcaa cgg 33

<210> 15  
<211> 30  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: primer

<400> 15  
ctacagggat cctcaggcac ccaactgcgag 30

<210> 16  
<211> 33  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: primer

<400> 16  
ctgtagggtc tcggcgctcg ggcaggaaac att 33

<210> 17  
<211> 354  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: sequence  
encoding chelon



<400> 17

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atgacacact gcgaggaggc cagcagcctg gccgaacaca agctcaagga cgtgcgcgag 60
aagatggccg acttggcgcg catggaaacc gtgctgtctg aactcgtgtg cgcctgccat 120
gcacgaaagg ggaatgtttc ctgcccgttg atcgcgtcac tacagggatc ctcaggcacc 180
cactgcgagg aggccagcag cctggccgaa cacaagctca aggacgtgcg cgagaagatg 240
gccgacttgg cgcgcgatgga aaccgtgctg tctgaactcg tgtgcgcctg ccatgcacga 300
aaggggaatg tttcctgccc gagcgcttgg agccaccgc agttcgaaaa ataa 354
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<210> 18

<211> 509

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:sequence  
encoding chelon flanked by sequences derived from  
plasmid

<400> 18

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ccatcgaatg gccagatgat taattcctaa tttttgttga cactatcatt gatagagtta 60
ttttaccact ccctatcagt gatagagaaa agtgaaatga atagtctgta caaaaatcta 120
gataacgagg gcaaaaaatg acacactgcg aggaggccag cagcctggcc gaacacaagc 180
tcaaggacgt gcgcgagaag atggccgact tggcgcgcat ggaaaccgtg ctgtctgaac 240
tcgtgtgcgc ctgccatgca cgaaagggga atgtttcctg cccgttgatc gcgtcactac 300
agggatcctc aggcacccac tgcgaggagg ccagcagcct ggccgaacac aagctcaagg 360
acgtgcgcga gaagatggcc gacttggcgc gcatggaaac cgtgctgtct gaactcgtgt 420
gcgcctgcca tgcacgaaaag gggaatgttt cctgcccag cgcttggagc caccgcagc 480
tcgaaaaata ataagcttga cctgtgaag 509
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